

## Binomial Pattern

$$(a+b)(c+d) = ac + ad + bc + bd$$

$$(100+x)(100+y) = 10,000 + 100y + 100x + xy$$

$$(100+x)(100+y) = 10,000 + (x+y)100 + xy$$

### Mental Math

$$(103)(102) = (100 + 3)(100 + 2) = 10,000 + 200 + 300 + 6 \\ = 10,506$$

$$(104)(102) = (100 + 4)(100 + 2) = 10,000 + 200 + 400 + 8 \\ = 10,608$$

$$(105)(103) = (100 + 5)(100 + 3) = 10,000 + 300 + 500 + 15 \\ = 10,815$$

$$(98)(97) = (100 - 2)(100 - 3) = 10,000 - 300 - 200 + 6 \\ = 9,506$$

$$(103)(98) = (100 + 3)(100 - 2) = 10,000 - 200 + 300 - 6 \\ = 10,094$$